[IMPWK07]

Temporal dominance of sensations: A new tool to grasp multisensory interactions

M.C. Charles*, A. Romano, S. Yener, I. Endrizzi, E. Aprea, F. Biasioli, F. Gasperi
Fondazione Edmund Mach, Italy

In the last decade, Temporal Dominance of Sensations (TDS) has been developed to describe the evolution of perceptions during eating or drinking. However, it has never been used to specifically investigate multisensory interactions even though it is well known that perception is both a multisensory and dynamic process. Our work aims to examine multisensory interactions and particularly those related to flavour perception as being an important driver of food liking. Two case studies, combining TDS with other methods either sensory or instrumental, are presented to illustrate the potential of TDS.

Firstly, TDS was combined with descriptive analysis (DA) to investigate the effect of odorants associated with tastants on the perceptions of retro-nasal odour, taste and texture in a complex matrix such as apple. Some confirmed taste-smell relations showed the appropriateness of TDS to investigate sensory interactions. The combination with DA allowed the comparison of a holistic-qualitative-consumer with an analytical-quantitative-panellist point of view which turned out to be complementary. Less obvious interactions, e.g. smell-texture interactions, were also identified.

Secondly, TDS was coupled to nose-space (NS) analysis to explore the impact of roasting and sugar on flavour perception and volatile release during coffee drinking. NS is a dynamic method to measure *in vivo* volatile release via direct injection mass spectrometry: Proton Transfer Reaction-Time of Flight-Mass Spectrometry in our study. Roasting degree, sensorially and instrumentally, discriminated the samples whereas sugar addition modified mostly the sensory perception. This result emphasizes the presence of taste-smell interactions, due to congruence effect between sweet taste and some flavours of coffee. Candidate “temporal dominance markers” were also identified as useful compounds to explain changes in temporal perception.

These findings illustrate the potential of TDS and its coupling with other sensory and instrumental techniques to study multisensory interactions in real food matrices.

Keywords: Temporal dominance of sensations, multisensory interactions, nosespace analysis, descriptive analysis